AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Original) A method for synchronizing a pulse stream with a data stream in an optical communication system, comprising:

generating an optical data signal for transmission through the optical communication system, the data stream having a duty cycle less than fifty percent, the optical data signal being formed from the pulse stream and the data stream;

detecting an optical power level associated with the optical data signal; and

synchronizing the pulse stream with the data stream based on the optical power level associated with the optical data signal, wherein the data stream with duty cycle less than fifty percent variably attenuates the pulse stream to produce the optical data signal.

2. (Original) The method of Claim 1 wherein the pulse stream having a Return to Zero transmission format and a phase relative to the data stream.

3. (Original) The method of Claim 2 wherein the step of synchronizing the pulse stream with the data stream further comprises adjusting the phase of the pulse stream.

4. (Original) The method of claim 3 wherein the step of adjusting the phase of the pulse stream further comprises adjusting a phase offset setting of a pulse driver.

5. (Original) The method of Claim 1 further comprises reducing the duty cycle below fifty percent via an eye-diagram manipulation technique, the eye-diagram manipulation technique includes examining an eye-diagram of the modulated data; and lowering a crossing-level of the eye diagram to a value lower than fifty percent, thereby resulting in a reduced duty-cycle.

6. (Original) The method of Claim 5 wherein the step of reducing the duty cycle further comprises selecting the value such that a reduced duty cycle data pulse does not distort a Return to Zero pulse of the pulse stream at an optimal synchronization setting.

7. (Original) The method of Claim 6 wherein the step of reducing the duty cycle further comprises selecting the value based on an initial shape for the Return to Zero pulse and a shape of a data pulse of the data stream.

8. (Original) The method of claim 5 wherein the step of lowering a crossing-level of the eye diagram further comprises electrically reducing the duty cycle at a data source.

9. (Original) The method of claim 5 wherein the step of lowering a crossing-level of the eye diagram further comprises optically reducing the duty cycle at an optical modulator.

10. (Original) The method of Claim 9 wherein the step of optically reducing the duty cycle further comprises adjusting an optical bias level of the optical modulator such that an electrical signal of the data source primarily drives a bottom portion of an electro-optic transfer function of the optical modulator.

11. (Original) The method of Claim 1 further comprising maintaining the duty cycle below fifty percent over a transit exchange lifetime of the data stream.

12. (Original) The method of Claim 11 wherein the step of maintaining the duty cycle further comprises at least one of an appropriate modulator bias and data driver amplitude control loops.

13. (Original) The method of Claim 4 wherein the step of adjusting is further defined as dithering the phase offset setting at a dither frequency.

14. (Original) The method of Claim 13 wherein the step of synchronizing the pulse stream with the data stream further comprises using an analog control loop to at least one of maximize a frequency component of the dither frequency at twice the dither frequency, and minimize a frequency component of the dither frequency at the dither frequency.

15. (Original) The method of Claim 4 wherein the step of adjusting is further defined as dithering the phase offset setting at a phase change amount.

16. (Original) The method of Claim 15 further comprises the step of measuring the output power at transit exchange outputs.

17. (Original) The method of Claim 1 wherein the step of synchronizing the pulse stream with the data stream further comprises maximizing the optical power level associated with the optical data signal.

18. (Original) The method of Claim 1 wherein the step of synchronizing the pulse stream with the data stream further comprises using closed loop feedback control.

19. (Original) A propagating wave for transmission over an optical communications system, the propagating wave comprising a gated pulse generated by a pulse source and a data source, said pulse source and said data source synchronized according to the method of claim 1.

20. (Original) A transmitter for use with an optical communications system, said transmitter transmitting a signal comprising a gated pulse generated by a pulse source and a data source, said pulse source and said data source synchronized according to the method of claim 1.

21. (Original) An optical communications system, the system comprising:

a transmission medium;

a receiver; and

the transmitter of claim 20.